

REMARKS

Claims 1-6 have been examined.

I. Preliminary Matters

The Examiner has objected to the title as not being descriptive of the invention to which the claims are directed. Accordingly, Applicant has amended the title as suggested by the Examiner. Applicant submits that the title should not be used to narrow the scope of the claims.

II. Rejections under 35 U.S.C. § 112, first paragraph

The Examiner has rejected claims 1, 2 and 6 under 35 U.S.C. § 112, second paragraph, as allegedly failing to comply with the written description requirement. The rejection as stated is respectfully traversed. The bandwidth values the examiner questions were recited in the application as originally filed, and the specification explains why these numbers were chosen.

For example, on page 4, it is disclosed that the bandwidth of the filter 1 is chosen in relation to the bit timing of the signal stream to be received, with a goal of achieving a quality factor Q between 300 and 400. It is explained that this corresponds to a relative bandwidth of around .03% of the bit timing, and applicants have chosen a range of 0.2 to 0.4 as a reasonable range on either side of an approximate value. There is nothing magical about it, and nothing that would not be clear to the ordinary artisan.

Since specific values are provided, Applicant submits that one skilled in the art would clearly understand that Applicant had possession of the invention at the time of filing. In other words, specific values and ranges are provided, in regard to the filter, and such disclosure fully satisfies the requirements set forth in MPEP §2163 et seq.

III. Rejections under 35 U.S.C. § 103(a) in view of Hansryd (A Simple, Low Timing Jitter, Sub-Multiple Clock Recovery Scheme, September 20-24, 1998, European Conference on Optical Communication, pgs. 471-472), Paine et al. (US 3,626,298) and Andrews et al. (US 4,715,049).

The Examiner has rejected claims 1, 2 and 6 under 35 U.S.C. § 103(a) as allegedly being unpatentable in view of Hansryd, Paine and Andrews.

A. Claim 1

Applicant submits that claim 1 is patentable over the cited references. For example, claim 1 recites that a wideband bandpass filter has a relative bandwidth of 0.2% to 0.4% of a bit timing of transmitted signals.

The Examiner acknowledges that Hansryd fails to disclose the above feature, but contends that Paine does, and the Examiner maintains that it would have been obvious to implement the filter of Paine in the system of Hansryd. Applicants disagree.

Hansryd, at the top of the left column of page 472, states that the Q-value of the filter is 1800. This is 4.5 to 6 times the Q factor sought by the present invention. Our specification explains that to achieve our goal for a quality factor we choose a bandwidth that is approximately 30 MHz. Smaller bandwidth leads to higher Q factor, and Hansryd chooses a bandwidth of 5.5 MHz, which is .055% of his 10 GHz bit timing. The Q factor to be achieved and the bandwidth as a percentage of bit timing is dramatically different from what is required of the present invention.

Filter 40 of Paine is a loop filter for use in a phase-locked loop arrangement. By virtue of the differing systems disclosed, Applicant submits that one skilled in the art would not be motivated to replace the High Q filter of Hansryd with the loop filter 40 of Paine (see Fig. 1 of Paine). As described at lines 38-50 of column 7, the loop bandwidth is initially larger and is then narrowed after bit lock is achieved, to give a better sync or tracking performance. The requirements of a loop filter such as in Paine are far different from the filter in Hansryd. A bandwidth of 0.001% of the bit rate would decrease the Q factor denominator by a factor of 55, thus resulting in a Q factor 55 times as great as the 1800 Q factor value desired by Hansryd. In other words, making the modification proposed by the examiner would result in a Q factor of approximately 99,000, which is so far different from what is required in Hansryd that it could not have been considered obvious without some specific direction to make such a change, and that specific direction is missing.

In addition, the expression “down to 0.001 percent of the bit rate” does not teach a range of 0.2% to 0.4%. Those values are between 200 and 400 times as large as the .0001% value

given in Paine. “Down to” may well be considered to teach something above the lower limit, but not by a factor of 200 to 400.

In addition, claim 1 recites that the wideband bandpass filter has a transient recovery time that is less than the time by which the signals are delayed on the delay path, and the time by which the signals are delayed on the delay path is in turn less than the decay time of the wideband bandpass filter.

The Examiner acknowledges that Hansryd fails to disclose the above features, but contends that Andrews does. In particular, on page 6 of the Office Action, the Examiner summarily maintains that the delay set by the delay element 26 of Andrews discloses the claimed transient recovery time and decay time comparisons. Applicant submits that such assertion is in error. For example, Andrews merely discloses that the delay of the clock recovery signal and the retiming signal will be matched, regardless of variations between the data and clock signals (col. 4, lines 1-6). The delay circuit 26 simulates the clock recovery path, such that the signal path for DATA IN is subject to the same temperature variations, processing variations, etc. as the clock recovery signal path (col. 3, line 62- col. 4, line 1). Such disclosure fails to provide any teaching or suggestion of the claimed transient recovery time and decay time comparisons.

As set forth in MPEP §2143, a basic requirement of a *prima facie* case of obviousness is that the prior art reference(s) teach all of the claim limitations. Since neither Andrews, Hansryd nor Paine teach or suggest the claimed transient recovery time and decay time comparisons, Applicant submits that claim 1 is patentable over the cited references. If the rejection is to be

maintained, Applicant respectfully requests the Examiner to specifically indicate where the transient recovery time and decay time is discussed in Andrews or cite to a new reference in support of the rejection.

Based on the foregoing, Applicant submits that claim 1 is patentable over the cited references, and respectfully requests the Examiner to reconsider and withdraw the rejections.

B. Claim 2

Since claim 2 is dependent upon claim 1, Applicant submits that such claim is patentable at least by virtue of its dependency.

C. Claim 6

Since claim 6 contains features that are analogous to the features discussed above for claim 1, Applicant submits that claim 6 is patentable for at least analogous reasons as claim 1.

IV. Rejections under 35 U.S.C. § 103(a) in view of Hansryd, Paine, Andrews and Haykin (Communication Systems, 1978, John Wiley & Sons, pgs. 89-93)

The Examiner has rejected claim 3 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hansryd, Paine, Andrews and Haykin. However, since claim 3 is dependent upon claim 1, and Haykin fails to cure the deficient teachings of Hansryd, Paine and Andrews, in regard to claim 1, Applicant submits that claim 3 is patentable at least by virtue of its dependency.

V. Rejection under 35 U.S.C. § 103(a) in view of Hansryd, Paine, Andrews, Haykin and Malik et al. (US 5,577,056)

The Examiner has rejected claim 4 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hansryd, Paine, Andrews, Haykin and Malik. However, since claim 4 is dependent upon claim 1, and Malik fails to cure the deficient teachings of Hansryd, Paine, Andrews and Haykin, in regard to claim 1, Applicant submits that claim 4 is patentable at least by virtue of its dependency.

VI. Rejection under 35 U.S.C. § 103(a) in view of Hansryd, Paine, Andrews and Pachynski (US 4,025,720)

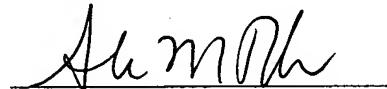
The Examiner has rejected claim 5 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Hansryd, Paine, Andrews and Pachynski. However, since claim 5 is dependent upon claim 1, and Pachynski fails to cure the deficient teachings of Hansryd, Paine and Andrews, in regard to claim 1, Applicant submits that claim 5 is patentable at least by virtue of its dependency.

VII. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: **June 21, 2006**